

Stone Mill Road Bridge Replacement Project Information

(Aug 26, 2010 -- Lon Hultgren, Director of Public Works, HultgrenLR@MansfieldCT.org)

The existing 70 foot bridge on Stone Mill Road over the Fenton River was built in the 1930's using "pan arch" construction wherein one monolithic slab of concrete is poured over half-sections of corrugated metal culvert pipe arches to form the structure and deck of the bridge. The center pier of the bridge washed out in the June, 1983 rainstorms and was rebuilt. In the 1990's the Town did a major repair of the deck where deteriorated concrete was removed and new concrete was placed.

The most recent rating of this bridge, last done in July 2006 shows a deck rating of 4 out of 10 and a substructure rating of 5 out of 10, made it eligible for Federal Funding through funds made available for municipal bridges through the CT DOT. It is currently rated to carry 15 tons (20 tons is the current minimum standard).

The Town applied for a state local bridge program grant (32% state funding) to replace the bridge in 2004, which was awarded to the Town. However, in the year after this design was begun, the bridge became eligible for the federal 80% bridge program (also administered by the State), so the design was stopped while this new grant was obtained and the design process was begun again under federal design requirements in 2006. The consulting engineering firm selected by the Town for this project is GM2 Associates in Glastonbury, CT.

Because the federal bridge requirements are more stringent than the state and local requirements, work had to be done to document the low traffic that travels over this bridge (less than 100 cars per day) so that the bridge could be rebuilt at the federal minimum width of 18 feet (20 feet is their normal minimum width --. it is about 15 feet wide now). This was documented by the Town (the traffic counts showed 96 cars per day crossing this bridge!). Additionally, because of neighborhood concerns that the slightly wider bridge might invite more traffic to use Stone Mill Road, the Town coordinated an effort to designate Stone Mill Road as a Town scenic road. This process was completed in late 2005 and Stone Mill Road is now a Mansfield Scenic Road. (Scenic Roads have restrictions on what can be done with them, particularly with regards to paving and widening.)

During the design process, the following information was discovered leading to additional design efforts:

1. The area near the bridge was identified as a possible Wood Turtle habitat. As such, an environmental research team was hired to survey the area and make recommendations to protect the turtle's habitat during construction.
2. Remnants of Indian artifacts were found along Stone Mill Road on the west side of the bridge. Accordingly, an archeological team was hired to do a Phase II archaeological study of the area to make certain there were not additional artifacts in the area that might be affected by the construction.
3. A "critter shelf" or area to allow wildlife to pass under the bridge above the normal high water line will be incorporated into the design as per new federal permit requirements.

Both of the above studies were completed and recommendations made to incorporate into the design of the project.

A structure-type study was done for the replacement bridge and several types of structures were evaluated as to their cost and aesthetic suitability for this project. A pre-cast twin concrete arch was chosen as the best alternative and its design is substantially complete. The face of the concrete (upstream and downstream) on the bridge will have architectural features (patterns and color) to compliment the concrete

façade of the nearby Gurleyville Grist Mill. Additionally, the foundation of the new bridge will be supported on micro-piles that can be placed in the riverbed without pile-driving, which could conceivably vibrate the old Grist Mill structure and cause damage. The concept of using stone walls as the barrier walls for the ends of the bridge was also investigated, but did not prove to be feasible due to the grades at the east end of the bridge (the area near the Grist Mill would have to be filled to a large extent to support these walls). A wetlands permit was received for this project on May 4, 2009. The cost of the selected structure is estimated to be \$1,446,000. Construction is planned for 2011, during which the river crossing will be closed to all traffic.

Laurel Lane Bridge Replacement Project Information

(Aug 26, 2010 -- *Lon Hultgren, Director of Public Works, HultgrenLR@MansfieldCT.org*)

Laurel Lane is a dirt road in Eastern Mansfield off Route 89. It has a 56 foot bridge over the Mt. Hope River that was last rebuilt in the late 1980's by the Town's public works department. It currently has steel beams on concrete abutments and a wooden deck. The bridge was last rated in June of 2006 and received a 6 out of 10 for the deck and a 4 out of 10 for the bridge's structure. In addition to its deteriorating condition, the bridge can only support 10 tons, so that larger vehicles cannot currently use it.

This bridge became eligible for an 80% federal bridge grant in 2005, which the Town applied for and was awarded. Design of the replacement bridge began in 2006. A structure-type study was conducted and the most favorable alternative for this bridge was a new steel girder/concrete deck structure to be built just upstream of the existing bridge.

During the design process, the following information was discovered leading to additional design efforts:

1. The 100-year flood boundary for the Mt Hope River would be slightly changed which created a requirement to completely re-map the floodway for this reach of the river. To complicate this process (which is already complicated enough), the DOT had just changed the process they used with CT DEP and the Federal Emergency Management Agency (FEMA) to map floodways and the new process had to be used for this bridge. These calculations and maps were made and filed with the Army Corps of Engineers in 2009. Because of this new mapping and permitting process, a Town wetlands permit has not yet been applied for. The wetlands application has been filed for September, 2010.
2. The flood elevation of the river in the 50 and 100 year storms is over the deck of the existing bridge. The new bridge will be a foot above the 50 year storm flood elevation and just slightly above the level of the 100 year flood elevation.
3. A "critter shelf" or area to allow wildlife to pass under the bridge above the normal high water line will be incorporated into the design as per new federal permit requirements.

The cost of the selected structure is estimated to be \$ 1,112,650. Construction is planned for 2011. Because there is no other access to the East side of the river, the old bridge will remain in place while the new bridge is constructed and be removed after the new bridge is completed.